

PATENT APPLICATION TRANSMITTAL LETTER
(Small Entity)Docket No.
6649-101

A \$

TO THE ASSISTANT COMMISSIONER FOR PATENTS

Transmitted herewith for filing under 35 U.S.C. 111 and 37 C.F.R. 1.53 is the patent application of:

PETER ROBERT BURNSFor: **SAND ANCHORS**

Enclosed are:

Certificate of Mailing with Express Mail Mailing Label No. **EM232115359US**

FOUR (4) sheets of drawings.

A certified copy of a application.

Declaration Signed. Unsigned.

Power of Attorney

Information Disclosure Statement

Preliminary Amendment

Inventor's Verified Statement(s) to Establish Small Entity Status Under 37 C.F.R. 1.9 and 1.27.

Other:

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	12	- 20 =	0	x \$11.00	\$0.00
Indep. Claims	1	- 3 =	0	x \$40.00	\$0.00
Multiple Dependent Claims (check if applicable)	<input type="checkbox"/>				\$0.00
				BASIC FEE	\$385.00
				TOTAL FILING FEE	\$385.00

A check in the amount of to cover the filing fee is enclosed.

The Commissioner is hereby authorized to charge and credit Deposit Account No. **18-1647** as described below. A duplicate copy of this sheet is enclosed.

- Charge the amount of **\$385.00** as filing fee.
- Credit any overpayment.
- Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
- Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Dated: **4 September 1997**


Signature

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CC: client

TITLE
SAND ANCHORS

BACKGROUND OF THE INVENTION

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This invention relates to sand anchors and in particular to sand anchors for recreational watercraft, off road vehicles and light aircraft.

DESCRIPTION OF PRIOR ART

10

There is a need for an efficient sand anchor to safely and securely anchor a vessel at a beach or the like.

15 Most recreational watercraft from small dinghies through to pleasure craft of up to say 15 metres in length carry one or more sea anchors designed to engage a sea bed.

In sheltered waters it is possible to anchor such craft adjacent the water's edge with a stern anchor secured to the sea bed and a bow, anchor embedded up the beach in the sand.

20 All sea anchors require for their effectiveness a long anchor line and a length of heavy chain connected directly to the anchor to maintain the shank of the anchor against or as close to the sea bed as possible to ensure effective engagement by the anchor flukes with the sandy sea bed.

25 For recreational boaters, it is quite inconvenient and often hazardous to step over the side of vessel carrying a heavy and cumbersome anchor and associated chain.

30 While the bow anchor is positioned on the beach some distance from the water's edge and thus usually at an elevated position relative to the water level, the angle of tension applied to the anchor line is generally very low.

Even although the tension applied to the anchor is low, typical

anchors such as Danforth, Admiralty pattern or the like have a quite ineffective holding power in loose sand.

Notwithstanding that the horizontal tension applied in an anchor rope, even by large pleasure craft due to wave or wash action is only of 5 the order of about 5kg, the constant tugging can drag even a very heavy anchor over the surface of loose sand.

United States Patent No. 4756128 describes a beach anchor having a flat strip of metal with downturned right angle bends at both 10 ends. The small downturned front portion and the larger tapered downturned rear portion cooperate when embedded to provide a resistance to tension in an anchor line. A pointed spike with a handle at its upper end assists in insertion and withdrawal of the anchor.

United States Patent Nos. 2870884 and 4679369 both describe 15 multiple stake anchoring systems wherein parallel stakes are driven through apertures in one or more frames to anchor the frame to the earth. United States Patent 5243795 describes an anchoring rod to which is attached anchor body having inclined apertures to guide further anchoring rods driven into the earth at differing predetermined angles.

In United States Patent No. 4315387 there is disclosed a ground 20 anchor stake having a pair of spaced parallel ground penetrating tines and ground penetrating arcuate tines pivotally connected thereto.

Each of United States Patents 4936194, 5460112, 4800843 and 4960064 all describe elongate ground penetrating stakes for anchoring or tethering purposes.

United States Patent No. 5431123 describes a boat anchor having 25 a body which is secured to the ground surface by a rod driven through an aperture in the body.

United States Patent No. 4732105 describes a boat anchor having a plurality of flukes and pivotal bail to release the anchor when fouled on a 30 sea bed.

There is therefore a need for a compact, lightweight sand anchor

which is easily and safely stowed and handled, is easily inserted and withdrawn from sand soil without the need for special tools and otherwise provides a secure beachside anchoring for watercraft in a wide range of sizes.

5

SUMMARY OF THE INVENTION

Accordingly it is an object of the present invention to provide a compact sand anchor which is easy to insert and withdraw from sand soil
10 and otherwise is capable of withstanding substantial tension in an anchor rope.

According to the present invention there is provided a sand anchor, said anchor comprising:-

15 two or more substantially parallel tines mounted in spaced relationship at respective first ends on a mounting member, said parallel tines each having a second free tapered end;

attachment means for securing an anchor line thereto; and,
a compression member adjacent said first ends of said tines and lying in a plane parallel to said tines.

20 The anchor may comprise from three to five tines.

Preferably the anchor comprises three tines.

Suitably the compression member comprises a planar member extending transversely over upper forwardly facing regions of said tines.

25 If required the compression member may comprise the mounting member.

Alternatively the compression member may be formed integrally with said mounting member.

The anchor may include a stabilising member extending forwardly of said mounting member.

30 Suitably, the stabilising member extends substantially perpendicular to the plane of the tines.

If required the stabilising member may be pivotally attached to said mounting member for movement between a retracted position adjacent said tines and an extended position substantially perpendicular to the plane of said tines.

5 Preferably the stabilising member includes attachment means.

The stabilising member may comprise a plate-like member extending transversely of said mounting member.

Alternatively, the stabilising member may comprise an arcuate member extending transversely of said mounting member.

10

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be more fully understood and put into practical effect, preferred embodiments are described with reference 15 to the accompanying drawings in which:-

FIG 1 shows a perspective view of one embodiment of the invention.

FIG 2 shows an inverted rear view of the embodiment of FIG 1.

FIG 3 shows a front elevation of the embodiment of FIG 1.

20 FIG 4 shows a perspective view of an alternative embodiment in a retracted position.

FIG 5 shows the embodiment of FIG 4 in an extended position.

FIG 6 shows a perspective view of the embodiment of FIG 4 from below.

25 FIG 7 shows a schematic side elevation of the embodiment of FIG 4 illustrating a possible mode of operation.

DESCRIPTION OF SPECIFIC EMBODIMENTS

30 In FIGS 1 to 3 there is shown one embodiment of a sand anchor comprising three parallel rod-like tines 1, tapered at their lower ends 2 and

supported in spaced relationship by an upper mounting member 3.

Extending across the front of the tines is an upright face which functions in use as a compression member 4.

5 The free ends 5 of the compression member 4 extend rearwardly below the mounting member 3 and pivotally support a stabilising member 6 in the form of an arcuate loop. The projecting ends 3a of mounting member 3 serve as stops to prevent the stabilising member 6 from pivoting beyond a plane substantially perpendicular to the plane of the tines when the stabilising member 6 is extended as shown in FIG 1.

10 Stabilising member 6 also provides a means for attachment of an anchor rope (not shown) by means of a shackle or the like (not shown).

In the embodiment illustrated, the mounting member 3 and compression member 4 are conveniently formed as an integral body from a length of angle section aluminium or stainless steel.

15 As shown in FIG 2, the tines 1 are welded to the inner face of compression member 4 and the outer tines 1a, 1b are also welded to the free end returns 5 of compression member 4.

Typically, the tines 1 are comprised of 10mm rod and may be of a length of from 200mm to 750mm.

20 In practice it has been found for sand anchoring an optimum tine length of about 250mm to 300mm provides adequate anchoring power combined with ease of stowage, and ease of insertion and retraction.

25 Below about 200mm in length the sand anchor does not provide secure anchoring power and over about 300mm, while anchoring power is increased, this exceeds the anchoring required for shore anchoring of vessels, adds to inconvenience in stowage and handling as well as increased difficulty in insertion and withdrawal from sandy soil.

FIGS 4-6 show an alternative embodiment of the invention and like reference numeral are employed for like features.

30 The main difference between the embodiment of FIGS 1-3 and that of FIGS 4-6 is the configuration of the stabilising member 6.

In FIGS 5-6 the stabilising member 6 comprises a plate-like body 7 extending transversely over the front of mounting member 3.

The free ends 8 of body 7 are downturned and extend rearwardly below free ends 3a of mounting member 3 to permit pivotal connection by rivets 9 or the like to the free ends 5 of compression member 4.

Like the embodiment of FIGS 1-3, the stabilising member 6 of FIGS 4-6 is constrained to pivot from a retracted position as shown in FIG 4 to an extended position in FIG 5 wherein the plate-like body 7 extends substantially perpendicular to the plane of the tines 1.

10 An aperture 10 is provided in stabilising member 6 to permit attachment of an anchor rope by means of a shackle or the like (not shown).

While not wishing to be bound by any particular theory underlying the operation of the anchor, the mode of operation of the anchor as presently understood will now be described with reference to FIG 7.

In use, the sand anchors according to the invention are placed at a distance from the water's edge and thus by nature, the tension applied in the anchor rope is at and parallel to the ground surface in the region of the anchor.

20 After selecting a region of sandy beach within which to anchor the vessel, the top layer of very loose sand, typically about 25mm in depth is swept aside and the anchor may be inserted into the sand by hand or foot pressure applied to the top of mounting plate 3.

25 The anchor is inserted to the fullest extent with the tines 1 and compression member 4 embedded in the sand and the plate-like body 7 lying against the surface 11 of the sand, the free ends 8 of member 7 also being embedded in the sand.

When tension is applied in the direction shown by arrow A to shackle 12 from an anchor line (not shown) by tugging from a vessel, the tines 1 initially undergo a degree of bending about a fulcrum point B about two thirds of the way along the length of the tines. This induces regions of

compression 13 and 14 shown by shaded areas respectively at the lower rear of tines 1 and the upper front of tines 1.

At the same time, compression member 4 induces a region of compression 15 shown in phantom. .

5 As tines 1 undergo a limited degree of bending plate-like body 7 also induces a downwardly directed region of compression shown in phantom at 16. This compression region 16 overlaps compression region 15 and the upper part of compression region 14 thus reinforcing the sand mass against a rotational force applied to the anchor.

10 As the periodic tugging tension is released, the resilience of tines 1 returns the anchor to a rest or static position.

It is believed that the downwardly extending free ends 8 of plate-like body 7 serve to contain the compression regions 15 and 16 at least against lateral dissipation by preventing displacement of sand.

15 For anchoring of larger vessels or anchoring in adverse conditions where greater anchoring power is required, two anchor members may be connected at spaced intervals in the direction of applied tension so that the more remote anchor can provide greater resistance to rotational forces applied to the other anchor and which might otherwise rotate the anchor sufficiently to allow it to be dislodged by anchor rope tension.

20 Although the sand anchors have been described herein with reference to beachside anchoring of pleasurecraft and the like, it will be readily apparent to a skilled addressee that anchors according to the invention may be employed for a variety of purposes in sandy soil conditions.

25 Other applications for the anchor may include anchoring of light aircraft, helicopters and the like or the provision of anchoring to enable winching of motor vehicles bogged in sandy soils.

CLAIMS

1. A sand anchor, said anchor comprising; two or more substantially parallel tines mounted in spaced relationship at respective first ends on a mounting member, said parallel tines each having a second free tapered end; attachment means for securing an anchor line thereto; and, a compression member adjacent said first ends of said tines and lying in a plane parallel to said tines.
2. An anchor as in claim 1 wherein the anchor comprises from three to five tines.
3. An anchor as in claim 2 wherein the anchor comprises three tines.
4. An anchor as in claim 1 wherein the compression member comprises a planar member extending transversely over upper forwardly facing regions of said tines.
5. An anchor as claimed in claim 4 wherein the compression member comprises the mounting member.
6. An anchor as in claim 4 wherein the compression member is formed integrally with said mounting member.
7. An anchor as in claim 1 wherein the anchor includes a stabilising member extending forwardly of said mounting member.
8. An anchor as in claim 7 wherein the stabilising member extends substantially perpendicular to the plane of the tines.
9. An anchor as in claim 8 wherein the stabilising member is pivotally attached to said mounting member for movement between a retracted position adjacent said tines and an extended position substantially perpendicular to the plane of said tines.
10. An anchor as in claim 9 wherein the stabilising member includes the attachment means.
11. An anchor as in claim 10 wherein the stabilising member comprises a plate-like member extending transversely of said mounting member.

12. An anchor as in claim 10 wherein the stabilising member comprises an arcuate member extending transversely of said mounting member.

ABSTRACT

A sand anchor for beach anchoring of vessels comprises three spaced parallel tines (1) pointed at one end (2) and secured in spaced relationship at the other end by a mounting member (3). The anchor includes a compression member 4 and a stabiliser 6 which coact with tines 1 to induce overlapping zones of compression in a sandy soil mass to reinforce the soil against movement of the anchor under load.

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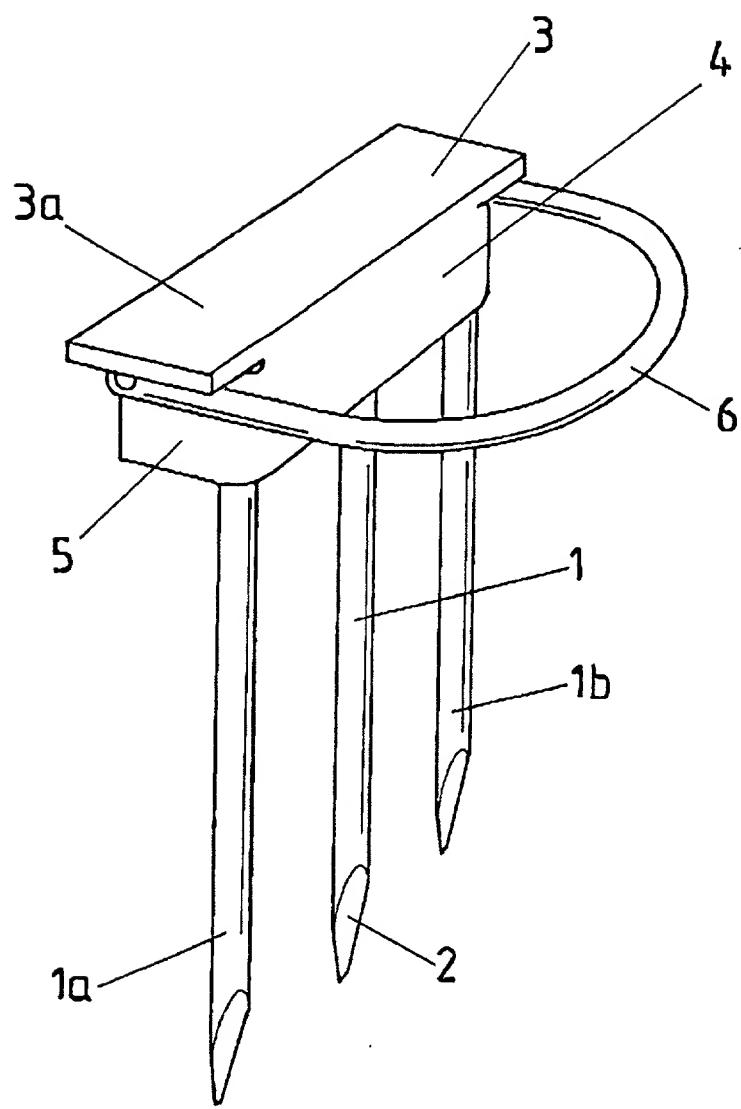


FIG. 1

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FIG. 3

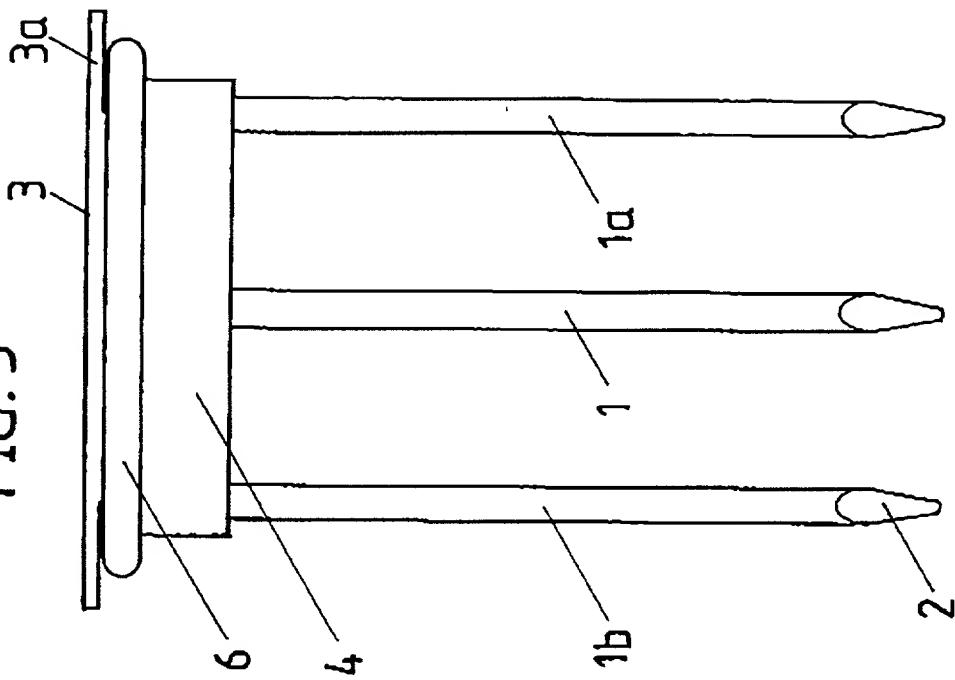
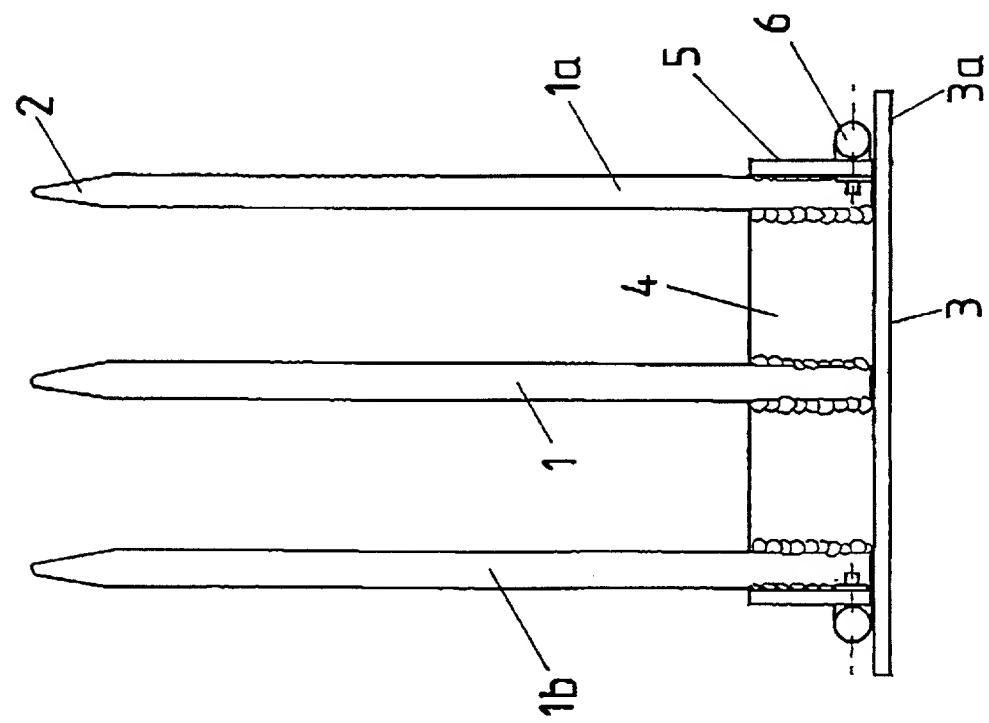


FIG. 2



3/4

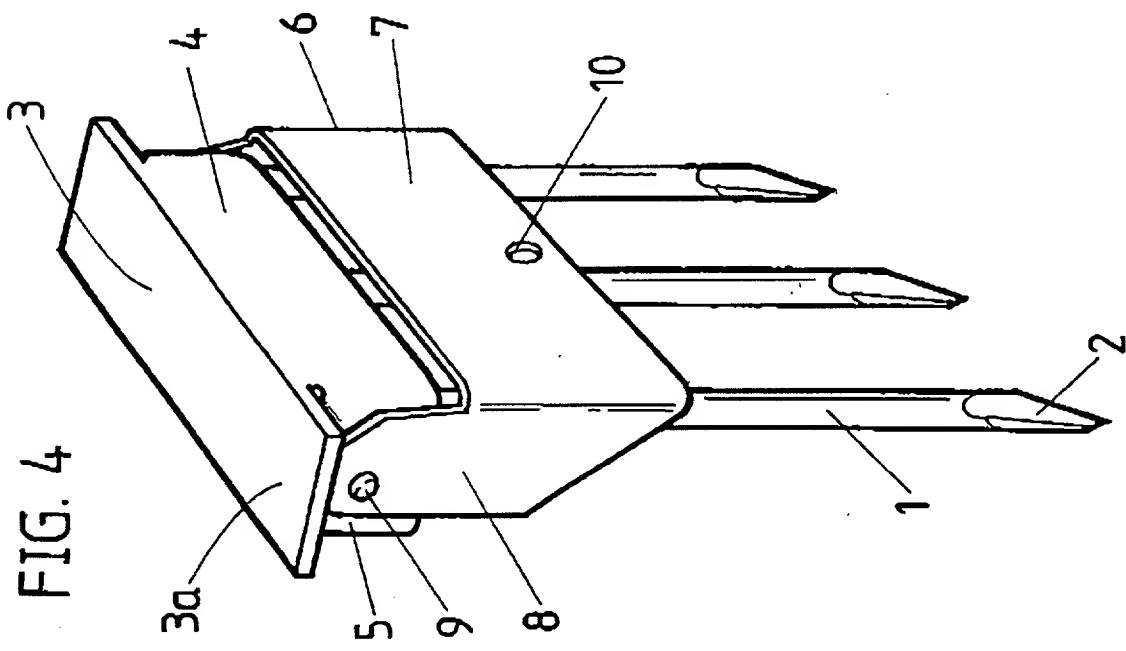
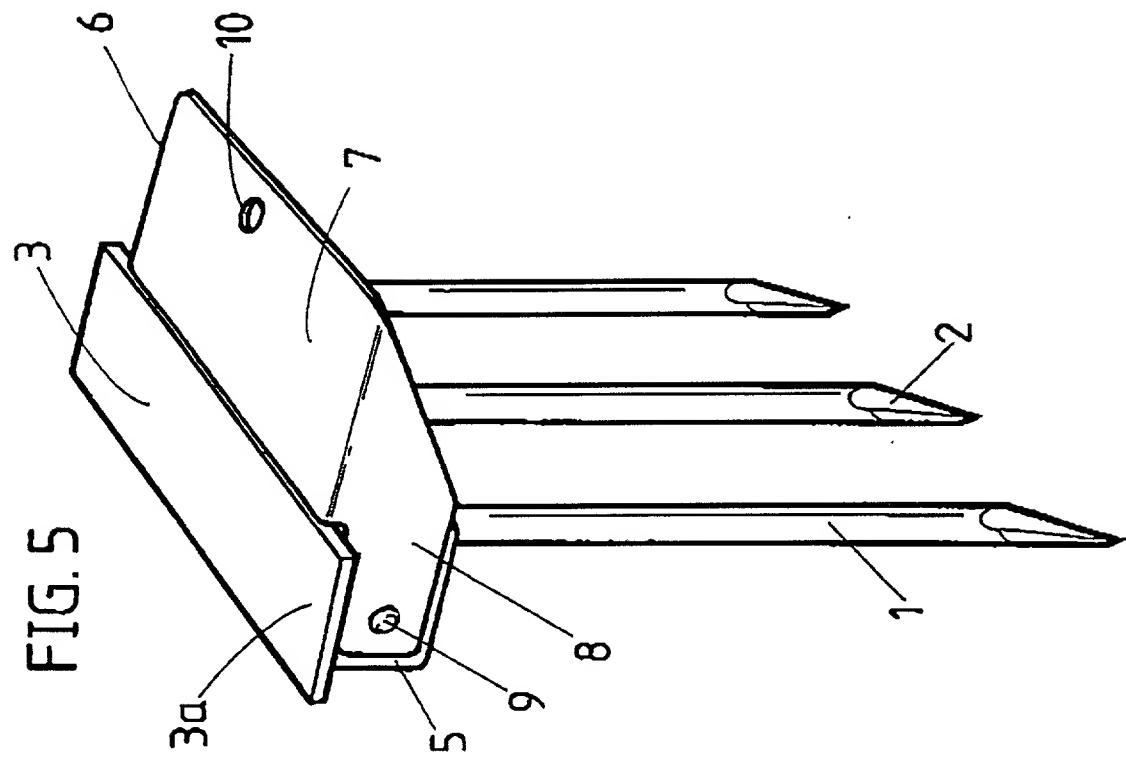


FIG. 7

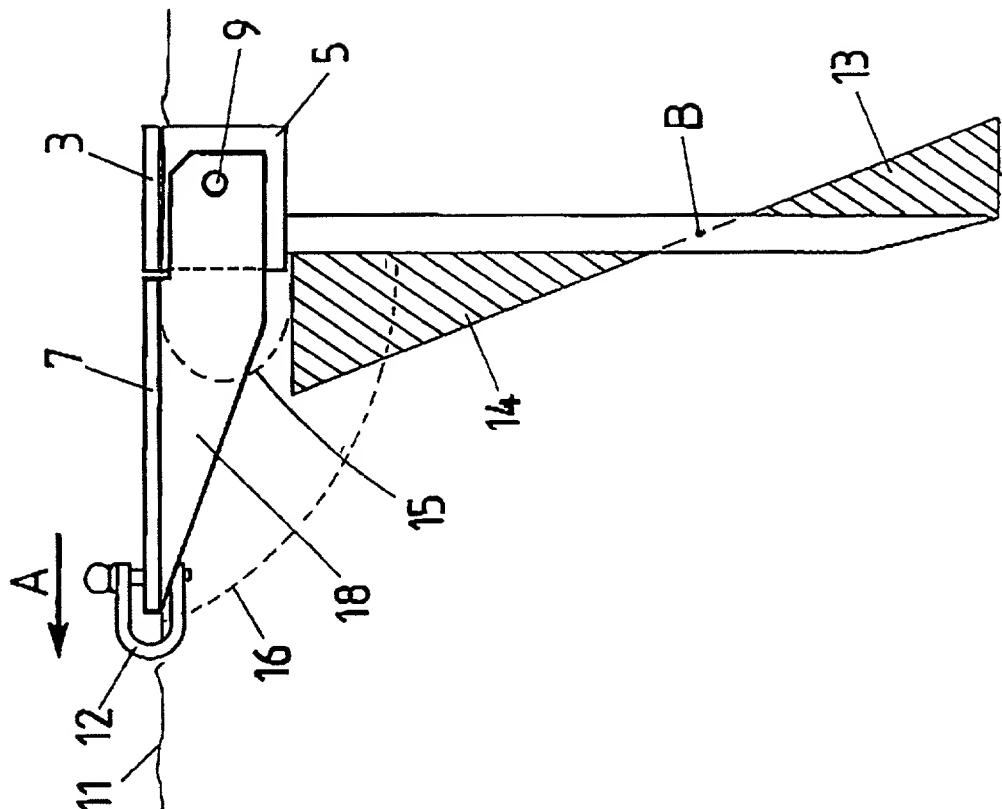
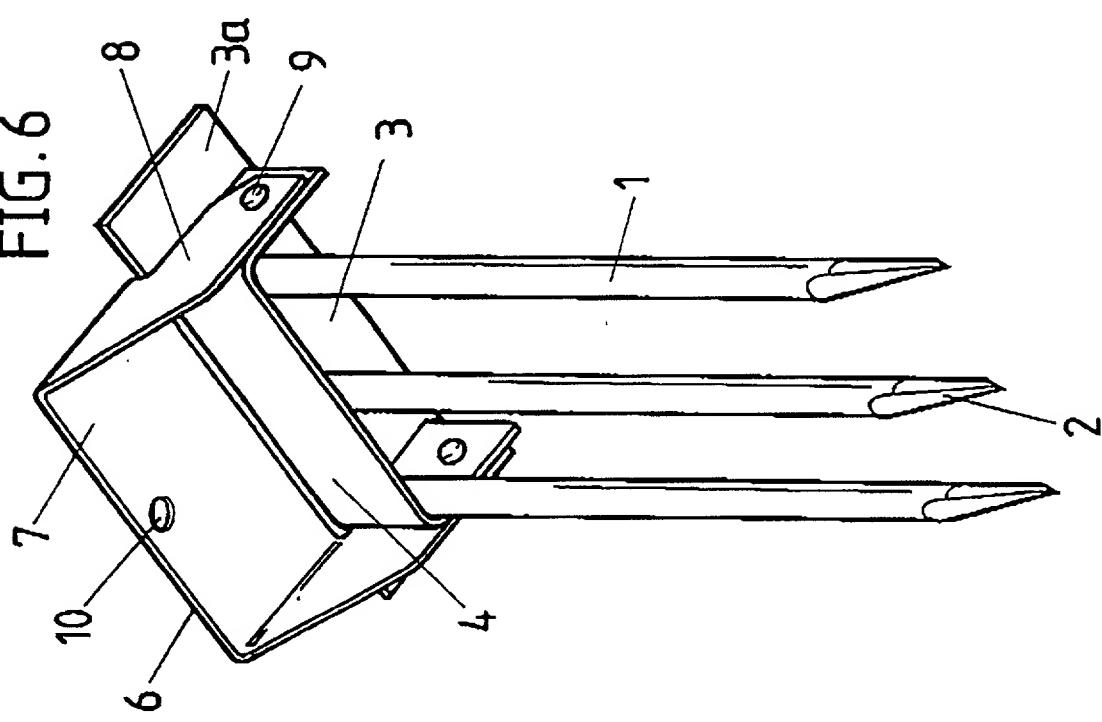


FIG. 6



COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY
 (Includes Reference to PCT International Applications)

ATTORNEY'S DOCKET NUMBER

6649-101

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled,

SAND ANCHORS

the specification of which (check only one item below):

is attached hereto.

was filed as United States application

Serial No. _____

on _____

and was amended

on _____ (if applicable).

was filed as PCT international application

Number _____

on _____

and was amended under PCT Article 19

on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY (If PCT, indicate "PCT")	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119
AUSTRALIA	PO2107	04-09-1996	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO

Combined Declaration For Patent Application and Power of Attorney (Continued)
(Includes Reference to PCT International Applications)

ATTORNEY DOCKET NUMBER
6649-101

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER
35 U.S.C. 120:

U S APPLICATIONS		STATUS (Check one)		
U S APPLICATION NUMBER	U S FILING DATE	PATENTED	PENDING	ABANDONED
PCT APPLICATIONS DESIGNATING THE U S				
PCT APPLICATION NO	PCT FILING DATE	U S SERIAL NUMBERS ASSIGNED (if any)		

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)

And we hereby appoint Billy A. Robbins, 18,313; Robert Berliner, 20,121; M. John Carson, 25,090; Michael S. Elkind, 28,710; John P. Spitals, 29,215; Ying-kit Lau, 35,760; and Horacio A. Farach, 34,158; all partners and associates of ROBBINS, BERLINER & CARSON, associate attorneys in said application, to prosecute this application and transact all business in the United States Patent and Trademark Office connected with this application and we hereby give Thomas J. Lannon, Reg. No. 18,417, the power to inspect the application papers, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected with this application.

Please direct all correspondence and telephone calls to ROBBINS, BERLINER & CARSON, 201 North Figueroa Street, Fifth Floor, Los Angeles, California 90012; (213) 977-1001.

201	FULL NAME OF INVENTOR	FAMILY NAME BURNS	FIRST GIVEN NAME PETER	SECOND GIVEN NAME ROBERT
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	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY
203	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201 	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203
DATE 29th August 1997	DATE	DATE

Applicant or Patentee PETER ROBERT BURNS
 Serial No. or Patent No. _____ Atty. Dkt. No. 6649-101
 Filed or Issued 4 September 1997
 For: SAND ANCHORS

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) and 1.27(b)) - INDEPENDENT INVENTOR

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code to the Patent and Trademark Office with regard to the invention entitled SAND ANCHORS

described in

the specification filed herewith
 application Serial No. _____ filed _____
 Patent No. _____, issued _____

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below

no such person, concern, or organization
 persons, concerns or organizations listed below*

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27).

FULL NAME _____

ADDRESS _____
 Individual Small Business Concern Nonprofit Organization

FULL NAME _____

ADDRESS _____
 Individual Small Business Concern Nonprofit Organization

FULL NAME _____

ADDRESS _____
 Individual Small Business Concern Nonprofit Organization

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the Issue Fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate (37 CFR 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

PETER R. BURNS

Name of Inventor _____ Name of Inventor _____ Name of Inventor _____

Signature of Inventor _____ Signature of Inventor _____ Signature of Inventor _____

29 AUGUST 1997

Date _____ Date _____ Date _____

AUG 28 '97 22:22